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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/533,579	02/06/2007	Stuart Arthur Bateman	B-5691PCT 622624-8	4359
36716	7590	11/30/2010		
LADAS & PARRY 5670 WILSHIRE BOULEVARD, SUITE 2100 LOS ANGELES, CA 90036-5679			EXAMINER ABU ALI, SHUANGYI	
			ART UNIT	PAPER NUMBER
			1731	
			MAIL DATE	DELIVERY MODE
			11/30/2010	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/533,579	<b>Applicant(s)</b> BATEMAN ET AL.	
	<b>Examiner</b> SHUANGYI ABU ALI	<b>Art Unit</b> 1731	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 13 September 2010.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,2,5-7,9-15,19-22 and 24-28 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) \_\_\_\_\_ is/are rejected.
- 7) ☒ Claim(s) 22 and 27 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                       | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Claim Objections***

Claim 22 is objected to because of the following informalities: please change “toclaim” to “to claim”. Appropriate correction is required.

Claim 27 is objected to because of the following informalities: please change “9organically” to “organically”. Appropriate correction is required.

Claim 22 is objected to because of the following informalities: Claim 18 is cancelled. Appropriate correction is required. The Examiner treats the claim 22 being depended from claim 1.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

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Claims are rejected under 35 U.S.C. 103(a) as being unpatentable over U. S. Patent Publication No. US20030209699 to Chyall, in view of U. S. Patent No. 4, 889, 885 to Usuki et al.

Regarding claims 1 -2, 9-10, Chyall disclose a composition comprising ionic clay, such as montmorillonite, an acid component, a nitrogen component and onium component, such as ammonium compound. The acid component can be melamine (neutral component) and salt of the melamine, such as melamine phosphate, which is ionic compound. The nitrogen source can be ammonium phosphate. (Abstract;[0016]-[0017],[0019],[0023],[0025] and [0028]). Melamine is capable of decomposing or subliming endothermically, and/or releasing volatiles with low combustibility on decomposition and/or inducing charring of organic species during thermal decomposition or combustion. They further disclose that the clay is preferred having an aspect ratio of more than 40 (col. 6, lines 36). But they are silent that the clay has a thickness as applicant set forth in claim 1

However, it would have been obvious to one of ordinary skill in the art at the time of invention by applicant to obtain the clay with the layer thickness as applicant set forth in claims 1-2, 9-10, motivated by the fact that Usuki et al., also dawn to fire retardant composite, disclose that silicate layer with a thickness in the range of 0.7-1.2 imparts mechanical characteristics and heat resistance to the composite (col. 4, lines 29-33).

. Regarding claims 5-7, Chyall discloses that the clay is montmorillonite ([0026]-[0027], [0032])

Regarding claims 11-13, Chyall disclose that the clay comprising sodium, calcium, magnesium ion. ([0032]).

Regarding claims 14 and 15, Chyall disclose that clay has a cation exchange ability of about 70 millequivalent per 100 g ([0026]).

Regarding claims 15 and 16, Chyall disclose that onium ion is intercalated with metal ion of the clay ([0028]).

Regarding claims 19-21, Chyall et al. disclose that melamine or melamine cyanurate is used in the composition ([0025]).

Regarding claim 22, Chyall et al. disclose that the compound can be melamine polyphosphate ([0025]).

Regarding claims 24 and 25, Chyall disclose that the intercalation agent can be onium ion with alkyl group ([0028]).

Claims 26-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over combined teaching of U. S. Patent Publication No. US20030209699 to Chyall and U. S. Patent No. 4, 889, 885 to Usuki et al, further in view of U. S. Patent No. 5, 770,644 to Yamamoto et al.

Regarding claims 26-28, combined teaching of Chyall and Usuki et al. disclose a composition set forth above. But they are silent that the clay is treated with a coupling agent.

However, Yamamoto et al. disclose a composition comprising layered silicate, quaternary onium( ammonium) compound, melamine cyanurate and silane( coupling

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agent). Yamamoto et al. disclose that the silane compound is functionalized halosilane with epoxy group (col. 10, lines 65-67).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention by applicant to modified the clay by using coupling agent , motivated by the fact that Yamoto et al., also drawn to fire retard material, disclose that the clay treated with coupling agent has improved dispersibility and anti-dripping property( col. 10, lines 50-55)

### ***Response to Arguments***

Applicant's arguments filed 09/13/2010 have been fully considered but they are not persuasive.

The applicant argues that the prior art fails to teach the ionic derivative of a triazine based molecule. The Examiner respectfully submits that melamine phosphate is ionic compound.

The applicant argues that one of ordinary skill in the art will not combined the teaching of the Chayll and Usuki to obtain the composition set forth in claim 1. The Examiner respectfully submits that Chayll et al. disclose a composition comprising neutral and ionic melamine. But they are silent about the thickness of the clay as applicants set forth in claim 1. However, Usuki disclose that silicate layer with a thickness in the range of 0.7-1.2 imparts mechanical characteristics and heat resistance to the composite (col. 4, lines 29-33).

***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SHUANGYI ABU ALI whose telephone number is (571)272-6453. The examiner can normally be reached on Monday - Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jerry Lorengo can be reached on 571-272-1233. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/J.A. LORENZO/  
Supervisory Patent Examiner, Art Unit 1731

/Shuangyi Abu-Ali/  
Examiner, Art Unit 1731